DOCUMENT RESUME

ED 039 708 56 EM 008 041

AUTHOR	Hudson, Robert B.
TITLE	The Future of Educational Television.
INSTITUTION	Academy for Educational Development, Inc., Washington, D.C.
SPONS AGENCY	Office of Education (DHEW), Washington, D.C. Bureau of Research.
BUREAU NO	BR-8-0571
PUB DATE	68
NOTE	38p.; This is one of the support papers for "To Improve Learning; a Report to the President and the Congress of the United States by the Commission on Instructional Technology", ED 034 905
EDRS PRICE	EDRS Price MF-$0.25 HC-$2.00
DESCRIPTORS	*Cable Television, Community Antennas, *Educational Television, Instructional Technology, Mass Media, *Public Television, Television Research

ABSTRACT

In order to predict the future of educational television, the author discusses first instructional television, then public television, and also comments on the applications of communications satellites to television in both industrialized and developing nations. He predicts that in the future instructional television will be mainly carried by closed circuit transmissions, possibly augmented by community antenna television systems (CATV). Other developments will probably include a Federally supported public television, use of satellite transmission by the Corporation for Public Broadcasting, and a nationwide linkage of CATV systems. He bases his predictions on a survey of the present state of educational television, federal legislation on broadcasting, and the technological innovations which are just beginning to be used in commercial television. He speculates on the possible advantages modern educational technology has for solving the population explosion at the university level. In closing, he considers what effect technology will have on social institutions. (JY)

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL OFFICE OF EDUCATION POSITION OR POLICY.

ED039708

The Future of Educational Television

by Robert B. Hudson*

With reference to the future of educational television, if one is permitted to separate it out from the interrelated communications complex, I should like to talk first about instructional television, then about public television, including some comments about the applications of communications satellites to television in both industrialized and developing countries.

To plunge forthwith into an obscure future, instructional

---

* Robert B. Hudson is senior vice president, National Educational Television.

Note: This paper was prepared for and presented at "Toward Century 21," a conference at Stanford University, April 4, 1968.

EM008 041

television, long before the turn of the century, will have little need for today's ETV stations. ITV will not be using the broadcasting band of frequencies. The stations that were sought, reserved and claimed in the name of education will go public, that is, they will be used mainly for public broadcasting. Instructional, or school television, including academic and occupational courses for adults, will be carried mainly by closed circuit transmissions. This prediction is clearly contingent on the assumption that schools exist 30 years hence in much the same physical and functional shape as we know them today, and this by no means is a certainty. Should the education of children and youth be reassigned on some larger dispersal base, computerized and instructional television information flow through CATV - community antenna television systems - could readily augment closed circuit systems.

The physical fact is, of course, that a single TV channel, or even two channels are not adequate to the

instructional needs of a metropolitan area, or of a school system, or even of a single school. Subject matter, grade level work, that is often repeated in many sections, and clock hours, all are variables to be reconciled. Already there are more students to be educated than can be handled effectively by current techniques of teaching and administration. The curve is sharply up and the pressure of sheer numbers will force more sophisticated technological innovation in instruction perhaps sooner than schools are ready for it.

We try to have diversified schools - quite the opposite of the French pattern where all students in a given grade study the same subjects at the same clock hour - and we need diversified services. Open circuit broadcasting nevertheless is effectively opening up the school arena to electronic inputs and it will continue to service schools in remote areas but, inevitably, it will give ground to the multi-channel, closed-circuit system augmented, on a spot basis, by open channels in the 2500 megahertz band.

Educational administrators and teachers, at least many of them, are finding a variety of ways to improve teaching and enhance the learning experience. That an integrated use of television can help in doing this has been demonstrated over and over again. Why has television proved so effective when other projection and filming techniques have had only lukewarm reception in the past? The Educational Facilities Laboratory answers that question in this way: "Of audio-visual tools available, television appears to offer the broadest potential. The teaching image is easily transmissible by air and cable. It is reproducible from magnetic tape. It is viewable at relatively high ambient light levels without the need for darkening a room. It permits viewing of current events concurrently with the occasion. Taped programs, entire courses or laboratory demonstrations may be banked in libraries for use as required. Such tapes and/or programs for the slow learner or the advanced student may serve to enrich the gifted and help the slow. The viewing

and audio instrument itself is relatively inexpensive, easily used, widely available in a variety of sizes and easily maintained. The arts of the industry are rapidly improving and lowering the costs of receiving, transmission, recording and production equipment."[2] But television, like library books, language labs, films, audio tapes, programed instruction and the like must be available when the teacher needs it and when students are prepared and ready for it. With a single ETV channel, that patently is impossible. With six channels or twelve or more feeding into each school, the distribution problem is solved. It remains only that schools have available television courses and related materials that complement the classroom and make a positive and often a unique contribution to teaching and learning.

Herein lies the rub. One is tempted to say that television courses today are in the McGuffy Reader stage. How to use the medium effectively is the problem. For nearly half a century educational films have compressed

large amounts of pictorial information into ten-minute reels with a narrator "telling it." They break the class routine, then it's over and done without much relation to course or lesson plan. Instructional television, on the other hand, was used in its first decade mostly to carry the image of a teacher from one classroom to another with a visual prop only occasionally introduced. It is not enough to simply pick up conventional teaching techniques as practiced within the limiting boundaries of the classroom. New procedures must evolve to capitalize more fully on the unique characteristics of the medium. Things are getting better. Work is being done in many parts of the country on curriculum planning, presentational method and utilization in television courses. The Education Development Center in Massachusetts and the National Center for School and College Television at Indiana University are taking the lead in course experimentation and improvement. In spite of the fact that most ITV producers try to edit into their programs a variety of information

streams or tracks, unfortunately the components seldom fall together to best advantage. Usually the problem is too little money, too many programs to produce; too little time, too little staff, too many other things to do; too little planning, too little experience, too little testing.

Up until now efforts in instructional television have been either experimental or "boot straps." A parallel would be asking school systems to write and produce their own text books. Foundations have probed the area and the United States Office of Education has researched the initial decade of experience. Now the big boys have moved in. Education has been discovered for what it is - a multibillion dollar market. A score of years ago, at the end of World War II, education's budget stood at $4 billion; now it tops $50 billion. You need wonder no more at surprising mergers in the corporate world - electronics and publishing are strange bedfellows no longer. Large hardware is married to large software and it foreshadows the shape of the future.

These new enterprises have staked out claims in the educational materials field with heavy emphasis on educational technology. They are concerned with computers, with information storage and retrieval, with feedback, and are seeking ways of giving students ready access not only to great storehouses of knowledge but better ways of assessing and thinking about problems.

The view is widely held among educators that a surgical attitude toward institutionalized education and the logistic problems it faces is in order. Dean John I. Goodlad of the Graduate School of Education at UCLA asserts that "the incidence of nonpromotion, dropouts, alienation, and minimal learning in school is such that one is led to conclude that today's schools are obsolescent. They were designed for a different culture, a different conception of learners and of learning, and a different clientele." He goes on to note, "The era that is in full bloom and is about to fade is human-to-human instruction.... The era of instruction

that will supersede the era of human-based instruction is to be the one of man-machine interaction. And the machine is the computer."[3] Already the electronic/publishing combines are portraying a picture of great instructional efficiency and hopefully freeing the human teachers to do human instructional tasks. Under today's load of curricular and extra-curricular work, perhaps even now many teachers don't have time for human person-to-person instruction. If the computerized system giving students and teachers finger touch command of information, utilizing television monitors (classroom wall size, carrel size and pocket size) along with other devices, matures by the turn of the century and the educational establishment is willing to use it, then teachers will have an opportunity to pursue human instructional goals.

Whereas instructional television is reaching impressive numbers of students in elementary and secondary schools, it is, nevertheless, employed in scores

307

of colleges and universities. It is reported that 28,000 of Ohio State's 41,000 students took some of their work, mostly math and biology, by television during the 1966-67 school year. Michigan State carried 27 courses a term over a TV closed-circuit hookup that interconnected 137 classrooms and 300 monitors, many of which were in dormitories. A 20-page log was required to itemize the offerings.

The wave of the future may further be foreshadowed by a plan put before the current session of the Indiana Legislature by the four state-supported universities - Indiana University, Purdue, Ball State and Indiana State - for a state-wide telecommunications system. The system would interconnect the four major campuses and twelve regional campuses. Eventually 22 private universities and colleges would be tied in. In addition, the system would link 16 clinical-medical teaching centers and community hospitals with the Indiana University Medical School. Agricultural and other non-credit adult education activities would make use of the system.

University students haven't fully endorsed the ITV system. Some just don't like it; some even prefer the T.A.s, but there is ample evidence that information can be transmitted effectively and with good results given the proper motivation at the receiving end.

There are student complaints these days on campuses, in the megaversities, about lack of identity and dehumanization brought about by the application of management systems to academic and student affairs. One answers to a serial number and personality finds expression in a punched card. Don't despair, the road ahead is somewhat brighter. Universities are caught up in a population explosion that they are ill prepared to deal with. The ID card is only a symbol of the problem. Later in this century, by the time your sons and daughters are ready for college, it will not be that way. You won't have to send them to Reed or Swarthmore, or to Stanford Overseas to find their identities. The chief concern of university faculties will be the students -

not lecturing to students, but living with students and participating in the life of the college community in much the way that a Master of the College lives with students at Yale today. As Jacqueline Grennan has said, "Learning is not essentially expository but essentially exploratory."

Apart from his research, perhaps 80 percent of a professor's time is wasted in a classroom. The classroom is highly inefficient, there are so many better ways of getting information to students. Already the professor's books convey in one dimension what he knows about his area of specialization. In another generation he will have added other dimensions. And this is where the electronic/publishing mergers will make their contribution. A student in a study carrel through a simple coded system can have delivered instantaneously via a television monitor or a microform or facsimile full information on the subject or the problem that concerns him. He can have information in the form of data, document, case studies, professional opinion by one or more

persons, sequential cause and effect processes, a programed approach, or a filmed vignette, to mention a few formats. These will be single concept learning aids bearing precisely on the student's problem, not fully processed programs containing a load of materials and relationships irrelevant to the student's immediate interests. For example, with a six-minute single concept film or audio tape the student can be in the presence of the best professor or specialist in a given field. Or a micro-reader will place a selection of text or a whole document immediately on his screen in response to the touch of a button.

We have some experience now with the split screen on a television picture tube; we can see four golfers at the Masters playing under stress at four different locations on the course; we can have closeups of the snap of the ball in a football game AND of a lonesome end far out on the scrimmage line. Then, of course, there is the instant replay. Television central can isolate picture elements and it can

accept multi-channel feeds. Well, these electronic devices, and others even more sophisticated, can be applied to the learning situation too.

If you can divide a picture into four separate parts, why not into a hundred parts? Why not into a moving mosaic in which you can interchange parts or drop them out, thus making for a fascinating and imaginative study in relationships? This can be done now in the laboratory, but for your grandson it will be done in his study carrel.

National Cash Register has succeeded in writing a two-micron line width (a size about half the width of a red blood cell) with a laser beam. In terms of storage, this means that 10,000 pages could be stored on an area the size of one page. It will not be long before microforms will be adapted to computer systems for automatic retrieval of documents.

I should not want to leave the impression that students will be confined to carrels in the pursuit of their studies.

Carrels will represent focal points where the student can draw upon the full range of resources. As a matter of fact, he will be far less campus bound than you and I have ever dreamed of being, although we can carry paperbacks, tape recorders, radio and television receivers wherever we go. Cassettes of film and audio tape and microfiche in sizes ranging from wrist watch to cigarette pack that can supply hours of information on almost any subject are emerging even now from the laboratory. Of course, from the carrel he can have full documentary films or artistic performances fed in for the asking. Feedback will be programed into the system, both self-correcting aids which are central in programed instruction and discussion with other students and with specialists on duty in one of the information and materials centers.

The system is relatively simple, but it will take a generation before we accord book status and prestige to other information storage devices and organize and encode an

ever expanding curriculum suitable for the university man of the 21st Century. As I indicated earlier, instructional television in the elementary and secondary schools is still in the McGuffy Reader stage. At the college level it isn't even that far along. Today's university follows the pattern of the Medieval university; it "tells it" to the student or lets him read it. Perhaps not quite so much learning by rote as in the Middle Ages but not nearly enough premium on independent study. Opportunity for that will come as fast as information the student needs can be selected, processed in a variety of formats, stored, and made available at will.

When that day does come, then the professor can get down to the real business of education. He will spend his time with students, individually and in groups. He will be a generalist, not a specialist, and life, ideas and experience will be examined unfettered of 50-minute bells and numerical grades,

In short, by the beginning of Century 21 instructional

television, in concert with memory banks containing mankind's useful knowledge accessible in a variety of attractive and meaningful forms, will free the university to pursue its central mission of human to human interactive education.

Let's turn now to the future of what the Carnegie Commission on Educational Television has labeled "public television." Incidentally, the label will stick. Already it is taking on a distinctive connotation. In creating the term, the Commission provided a context. It said, "All television, commercial television included, provides news, entertainment, and instruction; all television teaches about places, people, animals, politics, crime, science. Yet the differences are clear. Commercial television seeks to capture the large audience; it relies mainly upon the desire to relax and to be entertained. Instructional television lies at the opposite end of the scale; it calls upon the instinct to work, build, learn, and improve, and asks the viewer to take on responsibilities in return for a later reward. Public

Television.... includes all that is of human interest and importance which is not at the moment appropriate or available for support by advertising, and which is not arranged for formal instruction."[4]

The National Educational Television Network and most of the ETV stations have been working that street for a number of years although the concept wasn't quite as sharp; nevertheless they welcome the creation of the Corporation for Public Broadcasting and the prospect of substantial funding.

The Public Broadcasting Act of 1967 contains a Congressional declaration of policy, a sharp reversal of the policy of 1934, and one that foreshadows the shape of television services for home reception as we approach the 21st Century. Section 396(a) of the Act states:

> "(1) that it is in the public interest to encourage the growth and development of noncommercial educational radio and television broadcasting, including the use of such media for instructional purposes;

"(2) that expansion and development of noncommercial educational radio and televison broadcasting and of diversity of its programing depend on freedom, imagination, and initiative on both the local and national levels;

"(3) that the encouragement and support of noncommercial educational radio and television broadcasting, while matters of importance for private and local development, are also of appropriate and important concern to the Federal Government;

"(4) that it furthers the general welfare to encourage noncommercial educational radio and television broadcast programing which will be responsive to the interests of people both in particular localities and throughout the United States, and which will constitute an expression of diversity and excellence;

"(5) that it is necessary and appropriate for the Federal Government to complement, assist, and support a national policy that will most effectively make noncommercial educational radio and television service available to all the citizens of the United States;

"(6) that a private corporation should be created to facilitate the development of educational radio and television broadcasting and to afford maximum protection to such broadcasting from extraneous interference and control."

That private corporation - The Corporation for Public

Broadcasting - has been created but at this date (April 1968) has not been funded.

When one considers the kind of program service that a people have a right to expect from television broadcasting in the limited and publicly owned spectrum space available, it is interesting to compare the policies followed in Great Britain with those of the United States. In 1927 the British Government created the BBC and thus consolidated all broadcasting functions under this chartered corporation. The BBC did not accept advertising and its revenues derived from a tax on receiving sets. Its first director-general, Lord Reith, and his successors set the standards and the public exerted little influence on programing. The U.S.A. took the low road. At first the big four in the electronics group - Westinghouse, General Electric, AT&T and RCA - used their radio transmitters to broadcast programs that could be heard on the receiving sets that they, in turn, sold to listeners. Soon, however, the idea caught on that radio

programs were splendid carriers for commercial messages. Government policy followed a tortuous course but in the end the commercial system became dominant and operated free of all but technical controls except, of course, for some elastic rules covering matters of common decency.

These policies held in both countries, respectively, for two decades of radio and were carried over into the television era. Then, in the early '50s, seemingly both countries recognized that they were not getting the optimum service from the television medium. Britain thereupon created the Independent Television Authority as a commercial television service, and in the U.S.A. the Federal regulatory body reserved 250 television channels for noncommercial, educationally oriented programing. Now, after nearly a score of years and with the advent of the Corporation for Public Broadcasting, one may say that the U.S. is ready to beef up its noncommercial service and, like Great Britain, bring the two into some appropriate equilibrium. One may

say so, but it may not necessarily be true. The British Government has a long tradition of hands off its chartered instruments. Prime Minister Anthony Eden was effectively rebuffed when he tried at the time of the Suez crisis to bring the BBC under direct Government control. Not so in the United States. The Government here likes to retain fiscal control of the instruments it creates - a dedicated tax is an anathema to it - and sometimes these controls are subject to buffeting by political winds.

I predict that public television will grow and mature during the last quarter of this century. The Corporation for Public Broadcasting will obtain substantial Federal funding after some lean early years; its direct financial assistance will strengthen the stations in a basic network, and it will provide a line of distinctive programs to the stations and to the nation, but programs largely non-controversial in nature.

The range and depth of the Federally supported program

service will depend in large measure on the degree to which the Corporation is insulated from political pressures. If the Congress should take the advice of the Carnegie Commission and dedicate a tax source to the Corporation's support (e.g., an excise tax on radio and television receivers), then one could expect the exercise of considerable boldness in the underwriting of programs that scrutinize and probe the cause and effect aspects of political, economic and social problems. Lacking a dedicated tax - it would take a minor miracle to bring it off - Corporation-supported programs will tend to avoid controversial subjects except on issues where there is substantial consensus.

But high controversy is the engine of democracy, the essence of the democratic process. These are the issues that matter in our society and institutions that ignore them soon atrophy. Perhaps some of our universities and churches and political institutions are suffering dry rot because of their unwillingness or inability to face new issues and

resolve them in the white light of public discussion from which none are barred.

If public television is to be worth its salt it must deal with vital matters. If support for those programs doesn't come from the public treasury, it must come from private sources. But through what mechanism? One might say, parenthetically, that it is far easier to predict technological change than it is to design social mechanisms. Private funds also have masters, and a private source in and of itself does not guarantee an optimal use of freedom or a full and balanced exploration of all that is relevant in a subject. To neutralize the threat of privately imposed biases, public television has two precedents from the past that can guide it in the future. One is the principle of diversity and the other is the doctrine of fairness. Throughout its 15-year history educational television, now called public television, has relied upon a wide variety of program sources and an even wider mustering of producers in

conceiving and creating programs. Sources of support also run the gamut from foundation grants to business corporations to labor unions to state legislative appropriations. In the next decades as private funds are fed into public television to round out a program service primarily supported by Federal funds, their influence and credibility will vary directly with the diversity of their sources.

Another safeguard for public television, regardless of the source of funds, lies in the fairness doctrine. This doctrine was enunciated by the Federal Communications Commission as an interpretation of The Communications Act of 1934. In short, it requires that when a broadcasting station presents a point of view on a controversial issue of public importance "reasonable opportunity must be afforded for the presentation of contrasting views." The doctrine is being reexamined on public policy and constitutional grounds just now, but for our purpose it expresses the spirit of fair play to be observed by the managers of the public airways.

This doctrine will apply also to CATV systems if they finally are ruled subject to FCC regulation.

I noted early on in my comments that it is in the cards for instructional television to gravitate toward closed circuit, or wired transmission facilities. This trend inevitably will affect the numbers and kind of public television stations. There are now about 150 ETV stations on the air and some people forecast upwards of 200 in 1970. But instructional services provide the financial floor for three-quarters of these stations and the removal of that floor when schools abandon open-circuit broadcasting will result in substantial shrinkage in the number of stations. The Corporation for Public Broadcasting will assist many of the local stations, the number depending in large measure on the magnitude of funds available to it, but it seems unlikely that it will become the prime underwriter of hundreds of public TV stations. When Federal funds are dispensed there is apt to be mandatory support in some measure for at least

324

one station in each state. Population density will be another controlling factor, and the nature and quality of the local or regional service should weigh heavily in the allocation of funds. One hopes that other criteria will apply in the Corporation's grant making for program production.

In looking 30 years into the future, three possible developments cast faint shadows. The first is that of a public television network - perhaps one should say a group - of roughly a hundred powerful noncommercial stations, plus many translators, largely supported by Federal funds. In addition, there may be a scattering of locally supported stations. The second is the allocation of one or more channels on a domestic communications satellite feeding directly into home television receivers programs produced mainly under the aegis of the Corporation for Public Broadcasting, plus other programs required to round out the service. The third shadow shows the Corporation's and other programs being fed into homes through a nation-wide

linkage of CATV systems. These, of course, like the satellite, would be multi-channel carriers and viewers would enjoy a wide range of choices in selecting what they want to see and hear.

A further development that is more than a shadow is the television recorder and playback. Already Dr. Peter Goldmark of CBS Laboratories is demonstrating EVR - Electronic Video Recording - a system that for the first time makes it possible to show on conventional TV sets prerecorded programing from motion picture film and videotape at low cost. The time isn't far away when you will be able to set your recorder to automatically pick up and store the program that is on any given channel at any given time. It is then yours to have and to hold and to play at your option. You will be able, also, to purchase video programs in much the same way as you now buy audio tapes and records.

One need hardly comment on the pressures the Corporation will feel in deciding which local noncommercial stations to

support with Federal funds. Many a head will be bloodied before a rational and a tenable policy can be devised that will reconcile at least some of the urgent and pressure-laden demands.

Assuming the availability of an adequate number of frequencies, the communications satellite plan has the most going for it - a single television antenna in synchronous orbit 22,300 miles above the earth, in line of sight of and receivable by every television receiver in North America. Synchronous communications satellites are operating now over the oceans but at such low power that highly sophisticated and expensive ground stations are required for sending and receiving their signals. Professor Wilbur Schramm of Stanford forecasts the advent of "direct" satellites, that is, satellites emitting a sufficiently powerful signal to be picked up by a home TV receiver, by 1975. That gives us 25 years, then, to the end of the century in which to adjust our conventional broadcasting policies and patterns to opportunities opened

up by the new technology.

As has been noted, this will affect noncommercial stations in some important ways; indeed, the satellite could supersede these stations or it might be used to interconnect them. Even in the latter case the marginal ones may die off for want of operational support. But what of commercial stations? Will there be some kind of tariff policy that protects them in their market areas? The American system of local television stations presently is based in the physics of television signal propagation. Without going into the precise location in the spectrum of the public broadcast bands - VHF and UHF - which, incidentally, are now under review by the President's Task Force on Communication Policy, suffice it to say most TV stations effectively cover a circular area that has a radius of about 75 miles. A station may have competition in that area from other stations on other channels, but they, too, are local stations. Other coverage areas are assigned to other

Federally licensed stations. Thus, when an advertiser wants to reach the whole country with his commercial message he must contract for as many stations as are necessary to give him effective national coverage. Networks, as we know, make this easy for him.

But when the state of the satellite art develops to the point where it alone can give total national coverage, what will happen to the local TV station, be it commercial or noncommercial? Will public policy permit a sizable private enterprise industry to be emasculated? Will it countenance the elimination of a prime vehicle through which local voices can be heard, sacrificing them on the altar of one all-powerful national communications system? I do not believe that public policy will take that road (also, old technologies, like ingrained behavior patterns, die hard!) There is a powerful American tradition for local participation, for giving local voices access to the public forum. As our country becomes more densely populated there will be increasing

need for keeping the democratic base both informed and articulate and interactive.

There are other reasons, too, for not abandoning our system of local broadcasting stations: they are not as vulnerable as a satellite. You can lose a few stations and still maintain a full coverage communications system; if all of your bets are placed on a bird in orbit, you must remember that birds can be shot out of the sky.

By the turn of the century the odds are that we will enjoy a highly efficient integrated communications system. Satellites to be sure, not only for broadcasting but for computer linkage and other common carrier functions, but also broadcasting stations for radio, television and facsimile; coaxial cables, microwaves, lasers and other magic devices that only Bell Labs knows about.

If I appear to be downgrading the importance of communications satellites on the American scene, one must remember that this country has developed over the years a

communications grid second to none. Information can move instantaneously to every hamlet in America. Information flow is the blood stream of business, industry and government. It is one of the stronger cohesive forces in our social structure. A satellite, at best, complements the land based system and, like other ingenious technological breakthroughs, it will substitute for inefficient and uneconomic parts of it as performance dictates.

The potential role of the communications satellite in developing countries, however, is of a quite different order of magnitude. It can provide the basic service, not merely complement an existing one. In countries like India, Indonesia and Brazil, for example, there are no comprehensive communications grids. Trunk lines exist only between major cities and they are overloaded. The message simply doesn't get through to the town, the village, or the countryside. Education doesn't get through, agricultural information doesn't get through, family planning information doesn't

get through. Neither is there rapid and effective communication between central governments and local, state and regional authorities. Without current market and weather information the farmer is at the mercy both of the broker and of the elements.

In these developing countries a communications satellite can make the difference, and by 1975 they can be in business. By the year 2000 their national systems will rival those of industrial nations - as a matter of fact, by that time, they may be industrial nations. What the communications satellite can mean to them is the quantum leap toward national development. All India Radio's fifteen year plan for television station construction calls for 36 stations by 1982 and, significantly, those stations would cover only 19 percent of the country and only 25 percent of the population. The cost would be more than double that of a satellite. It will take India until the beginning of the 21st Century to have enough television stations to reach 50 percent of her

332

population. India's development problems, human and physical, are such that she can't wait 15 years or 30 years for conventional technology to service her information needs. Such is her quandary.

This paper has dealt mainly with prospective technological developments in communications as they may shape the future of educational television. The hardware is important because it not only serves society, it changes society. In education, both at school and at home, it promises to free us from our traditional routines and inhibitions. We are earth-bound no longer. As the remarkable prognosticator of the space age, Arthur C. Clarke, has said, "The communications network, of which the satellites will be nodal points, will enable the consciousness of our grandchildren to flicker like lightning back and forth across the face of this planet. They will be able to go anywhere and meet anyone, at any time, without stirring from their homes. All knowledge will be open to them, all museums and libraries of the world will be

333

extensions of their living rooms. Marvelous machines, with unlimited information-handling capacity, will be able to speak directly into their minds."[5]

Technology can open up this bright future, but in what measure will social institutions accept it and adapt to it? What will be the ground rules governing access to public television's cameras? To an international, people to people, television system? Who are the gatekeepers? On what basis is the work and product of creative people made available for public television and global television? The Register of Copyrights in Washington has not yet found an equitable formula for satisfying both the creator and user of unique works - the number of users being raised to the nth power through modern communications technology. The talent unions and the technicians also will have a voice in how their contributions are exploited.

A further consideration: What will people be doing in the 21st Century? How many will there be? How much leisure

will they have? What about their economic status and living conditions? What languages will they speak and how mobile will they be in moving around the world? Obviously we have few answers for these questions, but the answers, when they are found, will have important bearing on the shape of television and on the tasks that society assigns to it.

Perhaps television potentially is the greatest unifying force ever to act upon man, but to attain that potentiality we must try to find a way to unfetter it, a way to let it operate in the free market place of ideas.

FOOTNOTE REFERENCES

1. Erik Barnouw, A Tower in Babel, New York: Oxford University Press, 1966, p. 78

2. Design for ETV: Planning for Schools with Television, Educational Facilities Laboratory, 1968, p.22

3. John I. Goodlad, The Future of Learning and Teaching, AV Communication Review, Vol. 16, No. 1, Spring 1968, pp. 5, 6, 7

4. The Carnegie Commission on Educational Television, Public Television: A Program for Action, Bantam Books, 1967, p. 1

5. Arthur C. Clarke, Voices from the Sky, Pyramid Books, 1967, p. 121